DR 3800™ Benchtop Spectrophotometer

The Hach DR 3800 Benchtop Spectrophotometer allows for easy comparison of lab and process measurements with LINK2SC Software. It also has an intuitive color touch screen user interface and offers on-screen procedures for popular Hach programs.

Features and Benefits

High-Speed Wavelength Scanning

The DR 3800 Benchtop spectrophotometer features full-range wavelength scanning from 320-1100 nm. Use this feature to develop custom methods or maintain consistency of colored products.

Large Color Touch Screen Interface

The color display allows instant identification of alerts and easy comparison of overlayed graphical data. The touch screen interface is intuitive to use, minimizing the need to reference the user manual.

Easily Compare Lab and Process Measurement Data

Optional LINK2SC® Software allows data from an sc1000 digital controller to be displayed with laboratory readings. Irregularities can be quickly identified and investigated, preventing fines or unnecessary addition of excess treatment chemicals.

On-Screen Help Guide

Popular Hach and TNTplus working procedures are available with just a touch of the screen. Viewing step-by-step instructions from within the selected program reduces errors and eliminates the need for printed procedures.

More than 240 Analytical Methods and Chemistries

The Hach DR 3800 Benchtop Spectrophotometer can be used for more than 240 analytical methods. (Test parameters are listed on page 3.) These methods include more than 30 TNTplus™ reagent vial tests that provide innovative barcode labeling for reliable, automatic method detection. All of the chemistries and supplies needed for these tests are available from Hach.

Use a USB Memory Stick to Update the Instrument or Transfer Data

Easily update DR 3800 spectrophotometer systems and transfer measurement data with a USB memory stick. Use it to stay current as Hach releases new test methods and chemistries. Two USB ports on the instrument allow for a computer to be connected in one port, when used with Hach DataTrans™ Software, while the other is used to connect the spectrophotometer to a memory device or hand-held bar code scanner.

TNTplus Reagent Vials Designed for the DR 3800 Spectrophotometer

Hach has developed TNTplus reagent vials for selected analytical methods that provide the following features when used with the Hach DR 3800 Benchtop Spectrophotometer:

- *Automatic method detection—the spectrophotometer automatically reads the bar code, identifies the appropriate method, and takes the measurement to help eliminate human error, saving time and money.*
- *No reagent blank is necessary—high quality vials, tight regent production controls, 10-absorbance readings averaged for results determination, instrument calibration verification, and negligible instrument drift, all combine to eliminate the need to run reagent blanks. The option of running blanks is available, if required.*
- *Built-in accuracy—while rotating the vial, the spectrophotometer takes 10 absorbance measurements in less than 5 seconds. The average value is used to calculate the results.*

DW
WW
PW
IW
E
FB

DW = drinking water WW = wastewater municipal PW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage

HACH®

Be Right™

Specifications*

Operating Mode
Transmittance (%), Absorbance, and Concentration

Source Lamp
Tungsten

Pre-Installed Programs
More than 240

Available User Programs
50

Data Storage
1000 points

Export Capability
.csv (comma-separated values) file format

Wavelength Range
320 to 1100 nm

Wavelength Accuracy
±1.5 nm
(wavelength range 340 to 900 nm)

Wavelength Resolution
1 nm

Spectral Bandwidth
5 nm

Wavelength Calibration
Automatic

Wavelength Selection
Automatic: based on selected program
Automatic: based on barcode printed on TNTplus™ reagent vials
Manual: from the touch screen in all modes except stored programs

Enclosure Rating
IP 32

Operating Temperature
10 to 40°C (50 to 104°F)

Operating Humidity
80% relative humidity, non-condensing, maximum

Storage Requirements
Temperature: -40 to 60°C (-40 to 140°F)
Humidity: 80% relative humidity, non-condensing, maximum

Power Requirements
External power supply: 100-240V/ 50-60Hz, automatic changeover

Interface
USB 1.1 (10 ft. (3 m) cable, maximum)

User Interface Languages
English, French, Spanish, Portuguese, Chinese, Japanese, Korean (please contact your Hach representative for availability of additional languages)

Connections
1 x USB type A
1 x USB type B

Sample Cell Compatibility
1-in. square
1-in. round
1 cm square
1 x 5 cm
13 mm round
16 mm round
Multipath 1-in. / 1 cm
Pour-Thru™ with 1-in. / 1 cm path length
AccuVac® Ampules

Accessories
Included:
– 1-in. square matched glass sample cells
– Cell adapters for 1-in. round/ AccuVac Ampules, 1 x 1 cm cells, and multi-path 1-in./1 cm round cells
– Universal power supply, 100 to 240V, 50-60Hz, with plug adapters for EU, GB, US, China
– Adapter box for storing adapters
– Dust cover
– Help Guide Software

Optional:
– Hach Pour-Thru Cell Kit
– USB hand-held barcode scanner
– External USB keyboard
– DataTrans™ Software

Dimensions
368 x 144 x 359 mm
(14.5 x 5.7 x 14.1-in.) width, height, depth

Weight
6.4 kg (14.11 lb)

**Specifications subject to change without notice.*

Engineering Specifications

1. The spectrophotometer instrument shall be a multi-wavelength spectrophotometer designed for laboratory analysis of multiple analytes.
2. The instrument shall be capable of measuring the following substances or characteristics: alachlor; aluminum; arsenic; atrazine; barium; benzotriazole; boron; bromine; cadmium; chloride; chlorine dioxide; chlorine; chromium; cobalt; color; copper; cyanide; cyanuric acid; dissolved oxygen; fluoride; formaldehyde; hardness; hydrazine; iodine; iron; lead; manganese; mercury; molybdenum/molybdate; monochloramines; nickel; nitrogen (as ammonia, nitrate, nitrite, total nitrogen, total Kjeldahl nitrogen); chemical oxygen demand; oxygen scavengers; ozone; polychlorinated biphenyls; phenols; phosphonates; phosphorus; potassium; quaternary ammonium compounds; selenium; silica; silver; sulfate; sulfide; surfactants; suspended solids; tannin and lignin; total organic carbon; tolyltriazole; total petroleum hydrocarbons; trihalomethanes; toxicity; volatile acids; and zinc.
3. The following tests shall conform to USEPA-compliant methods: arsenic; chlorine (free); chlorine (total); chlorine dioxide; chromium (hexavalent); copper; fluoride; iron (total); lead; manganese; nickel; nitrogen (ammonia); nitrogen (nitrite); chemical oxygen demand; phenols; phosphorus (reactive); phosphorus (total); sulfate; sulfide; and zinc.
4. The wavelength range of the instrument shall be 320 to 1100 nm with accuracy of ±1.5 nm from 340 to 900 nm, resolution of 1 nm, and maximum bandwidth of 5 nm.
5. The instrument, depending on the test selection, shall automatically select the wavelength.
6. Readout modes shall include transmittance %, absorbance, and concentration.
7. The interface of the instrument shall be graphical with color touch screen.
8. The instrument shall provide graphical display and be capable of printing test results.
9. The instrument shall be equipped with storage capacity for 1000 data points (date, time, results, sample ID, user ID) and 50 user-defined calibrations.
10. Information stored in the instrument shall be capable of being downloaded in standard report format.
11. The instrument shall be capable of accepting 1-in. (25-mm) round cells/vials, 1-in. square cells, 13 mm round vials, 16 mm round vials, 1 x 5 cm cells, 1 cm square cells, and Pour-Thru cells with 1-in. and 1 cm path.
12. Power requirement shall be line voltage.
13. The instrument shall be warranted for one full year against defects in materials and workmanship.
14. The instrument shall be model DR 3800 Benchtop Spectrophotometer, manufactured by Hach Company.

Available Tests

The following table lists available tests and overall ranges for the Hach DR 3800 Benchtop Spectrophotometer. The ranges may represent more than one available test for the instrument. Consult your Hach representative, Customer Service, the Hach Master Catalog (Lit #2550), or the Hach web site at www.hach.com for complete details of all available tests for this instrument.

Parameter	Range	TNTplus Test
Alachlor	0.1 to 0.5 ppb, threshold	
Aluminum	0.002 to 0.800 mg/L	•
Ammonia, Nitrogen	0.015 to 50.0 mg/L	•
Arsenic	0.020 to 0.200 mg/L	
Atrazine	0.5 to 3.0 ppb, threshold	
Barium	2 to 100 mg/L	
Benzotriazole	0.2 to 16.0 mg/L	
Boron	0.2 to 14.0 mg/L	
Bromine	0.05 to 4.50 mg/L	
Cadmium	1.3 µg/L to 0.30 mg/L	•
Carbohydrazide	5 to 600 µg/L	
Chloramine, Mono	0.04 to 10.0 mg/L	
Chloride	0.1 to 25.0 mg/L	
Chlorine Dioxide	0.01 to 1000 mg/L	
Chlorine, Free	0.02 to 10.0 mg/L	•
Chlorine, Total	2 µg/L to 10.0 mg/L	•
Chromium, Hexavalent	0.010 to 1.00 mg/L	•
Chromium, Total	0.01 to 0.70 mg/L	•
Cobalt	0.01 to 2.00 mg/L	
Color	3 to 500 units	
COD (Chemical Oxygen Demand)	0.7 to 15,000 mg/L	•
Copper	1 µg/L to 8.0 mg/L	•
Cyanide	0.002 to 0.240 mg/L	
Cyanuric Acd	5 to 50 mg/L	
DEHA (Diethylhydroxylamine)	3 to 450 µg/L	
Dissolved Oxygen	6 µg/L to 40 mg/L	
Erythorbic Acid (Isoascorbic acid)	13 to 1500 µg/L	
Fluoride	0.02 to 2.00 mg/L	
Formaldehyde	2 to 500 µg/L	
Hardness, Total (Calcium and Magnesium as $CaCO_3$)	4 µg/L to 4.00 mg/L	
Hydrazine	4 to 600 µg/L	
Hydroquinone	9 to 1000 µg/L	
Iodine	0.07 to 7.00 mg/L	
Iron, Ferrous	0.02 to 3.00 mg/L	
Iron, Total	0.009 to 6.0 mg/L	•

Parameter	Range	TNTplus Test
Lead	3 µg/L to 2.0 mg/L	•
Manganese	0.006 to 20.0 mg/L	
Mercury	0.1 to 2.5 µg/L	
Methylethylketoxime (MEKO)	15 to 1000 µg/L	
Molybdenum, Molybdate	0.02 to 40.0 mg/L	
Nickel	0.006 to 6.0 mg/L	•
Nitrate, Nitrogen	0.01 to 35 mg/L	•
Nitrite, Nitrogen	0.002 to 250 mg/L	•
Nitrogen, Total	0.5 to 150 mg/L	•
Nitrogen, Total Inorganic	0.2 to 25.0 mg/L	
Nitrogen, Total Kjeldahl	1 to 150 mg/L	
Ozone	0.01 to 1.50 mg/L	
PCB (Polychlorinated Biphenyls)	1 to 50 ppm, threshold	
Phenols	0.002 to 0.200 mg/L	
Phosphonates	0.02 to 125.0 mg/L	
Phosphorus, Acid Hydrolyzable	0.06 to 100.0 mg/L	
Phosphorus, Reactive (Orthophosphate)	19 µg/L to 100.0 mg/L	•
Phosphorus, Total	0.06 to 100.0 mg/L	•
Potassium	0.1 to 7.0 mg/L	
Quaternary Ammonium Compounds	0.2 to 5.0 mg/L	
Selenium	0.01 to 1.00 mg/L	
Silica	3 µg/L to 100 mg/L	
Silver	0.005 to 0.700 mg/L	
Sulfate	2 to 900 mg/L	•
Sulfide	5 to 800 µg/L	
Surfactants, Anionic	0.002 to 0.275 mg/L	
Suspended Solids	5 to 750 mg/L	
Tannin and Lignin	0.1 to 9.0 mg/L	
TOC (Total Organic Carbon)	0.3 to 700 mg/L	
Tolyltriazole	1.0 to 20.0 mg/L	
Toxicity	0 to 100% Inhibition	
TTHM (Trihalomethanes, Total)	10 to 600 µg/L	
TPH (Total Petroleum Hydrocarbons)	2 to 200 ppm, threshold	
Volatile Acids	27 to 2800 mg/L	
Zinc	0.01 to 3.00 mg/L	

Ordering Information

DR3800-01	DR 3800 Benchtop Spectrophotometer; includes printed instrument manual, procedure manual on CD-ROM, universal power supply with exchangeable plug adapters for EU, GB, US, and China, adapters A, B, and C with adapter box, dust cover, 1-in. square matched glass sample cells, and Help Guide Software

Replacement Parts

LZV610	Power Supply; 100 to 240V, 47 to 63 Hz, international (exchangeable plug adapters for EU, GB, US, and China)
LZV583	Adapter A; 1 cm square cells
LZV585	Adapter B; multi-path cell, 1-in./1 cm, or Pour-Thru cell
LZV584	Adapter C; 1-in. round cells
LZV565	Replacement Bulb; 6V, 10W
LZV743	Adapter Carrier for storing adapters
LZV646	Light Shield
HYH020	Dust Cover
LZV811	Help Guide Software
2495402	Sample Cell, 1-in. square, matched pair

Optional Accessories

5940400	Pour-Thru Cell Kit; includes multi-path Pour-Thru cell, funnel, stand, and tubing
LZV537	Certified Test Filter Set
LZV582	USB Keyboard
LZV566	USB Hand-held Barcode Scanner
LZY274	DataTrans™ Software
LZV774	LINK2SC® Software

To complete your laboratory analytical instrumentation, choose from these new chemistries...

TNTplus™ Reagent Vials

New Hach TNTplus reagent vials are bar-coded for automatic method detection and auto-blanking when used with the DR 3800 Benchtop Spectrophotometer to save time, minimize errors, and reduce laboratory costs. Superior glassware provides the best precision and the vials flat bottom improves handling in the lab. (For a complete list of available TNTplus parameters, see the table on page 3)

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In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.

At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

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